Computer, end program

Making virtual worlds possible

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Holodeck

- Star Trek:  
  http://en.wikipedia.org/wiki/Holodeck

- A simulated reality, where 3D worlds could be simulated with force fields and projections.

- Load, run, freeze and store programs.
Final scene of Star Trek: Enterprise

http://youtu.be/pXotJu1CapU
As it was in the beginning

- Mainframe virtualization.
- IBM's CP-40 research system in 1967.
- Compartmentalize large processing capabilities.
- Run processes separately.
- Lease “slices” to different customers.
Too many servers?

- Data center challenges
- One physical server for one application
  - Web
  - Storage
  - Authentication
  - Network

Power, Cooling, Bandwidth...
Rise of Apache

- Apache VirtualHost.
- Multiple virtual web hosts in each physical server.
- Led to the adoption of Apache in server rooms.
- Eventually led to Linux to run these websites.
- Still one underlying OS.

Single point of failure?
Hypervisor

This is not a hypervisor

...although it is a VISOR
http://en.wikipedia.org/wiki/Geordi_La_Forge#VISOR
Type 1: Bare Metal
Hypervisor

Type 2: Hosted
Paravirtualization

- apps
- apps
- apps
- operating system (modified)
- hypervisor
- operating system (host)
- hardware
Cloud

ONE DOES NOT SIMPLY EXPLAIN CLOUD
Hypervisors galore!

Hypervisors (xen, kvm, vmware, hyper-v, virtualbox, ...)

https://www.openstack.org/software/
Let's begin!

http://virtualbox.org